Lucent Technologies

User's Guide

CAJUN P333T

STACKABLE SWITCH

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Lucent Technologies
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Chapter 1

Overview

The Cajun™ P330 family of stackable Ethernet workgroup switches includes a range of modules with 10/100/1000 Mbps ports and Layer 3 capability/ATM Expansion sub-module in Phase 2. The first product is the Cajun P333T switch which has 24x10/100 Mbps ports and an Expansion sub-module slot. The optional expansion sub-modules provide additional Ethernet, Fast Ethernet, and Gigabit Ethernet connectivity.

A Cajun P330 stack can contain up to 10 switches and up to 3 backup power supply units. The stacked switches are connected using the Cajun X330STK stacking sub-modules which plug into a slot in the back of the Cajun P330. They are connected using the X330SC or X330LC cable (if the stack is split between 2 racks). The Cajun X330RC cable connects the top and bottom switches in the stack and provides redundancy and hot-swappability in the same way that modules can be swapped in a modular switching chassis.

The Cajun P330 is fully compliant with IEEE standards for VLAN Tagging, Gigabit Ethernet, Spanning Tree and Flow Control. This full standards-compliance, combined with auto-negotiation for 10/100/1000 Mbps and half/full duplex facilitates the expansion of your network to match your company's growing needs.

Cajun P330 Family Features

- You can connect up to 10 Cajun P330 switches in a stack. Moreover, this stack can be either in one rack or split over several racks using the X330LC Long Cable, according to your requirements.
- Cajun X330STK - this stacking sub-module is used to connect Cajun P330 switches in a stack, via the Octaplane.
- Cajun P330 BUPS - this back-up power supply module supports up to four Cajun P330 switches.
- One RJ-45/RS232 front panel console connector for both terminal and modem (future release) sessions.
- Two fan units in every switch, with operation sensors.
- One virtual IP address for managing the whole stack, the P330 stack is managed as a single entity.
- Hot swapping of one switch at a time - by activation of the redundant cable:
  - — Does not disrupt the operation of other Cajun P330 switches
  - — Does not change stack configuration.
  - — Does not require network downtime.
- Connection through Telnet from the front panel ports of *any* switch, with:
  - — multiple levels of password protection
  - — login and inactivity timeouts.

Layer 2 Features

Auto-Negotiation

Every 10/100 port on the Cajun P330 supports Auto-Negotiation which automatically detects and supports the operating mode and speed of a connected device. Auto-negotiation is also supported on the Gigabit Ethernet ports for flow control mode only.

This means that you can simply connect the Cajun P330 to Ethernet or Fast Ethernet equipment at full or half duplex without configuration.

Congestion Control

Congestion control is a key element of maintaining network efficiency as it prevents resource overload.

The Lucent Cajun P330 supports congestion control on all Ethernet ports, using the following:

- Back Pressure in half duplex mode
- IEEE 802.3x Flow Control in full duplex mode

VLANs

The Cajun P330 VLANs are fully IEEE 802.1Q compliant and can handle up to 3k tagged VLANs.

Special VLAN (Virtual Sideband) for management provides physical security for key applications.

Link Aggregation Group (LAG)

LAG provides increased bandwidth and redundancy for critical high-bandwidth applications such as inter-stack links and connections to servers. You can aggregate the bandwidth of up to eight 10/100Base-Tx ports, two 100Base-FX or 1000Base-X ports.

Load sharing ensures that if one of the port connections fails, the other connections will assume the load seamlessly. Load balancing guarantees that the traffic load at any level will be evenly divided among all the LAG links.

LAG and Port Redundancy

Redundancy can be implemented between any two ports in the same stack. You can also assign redundancy between any two LAGs in the stack or between a LAG and a port.

Stack Redundancy

In the unlikely event that a Cajun P330 switch or Octaplane link should fail, stack integrity is maintained. The broken link is bypassed and data transmission continues uninterrupted. The single management IP address for the stack is also preserved for uninterrupted management and monitoring.

Hot-Swappable

You can remove or replace any unit within the stack without disrupting operation or performing stack-level reconfiguration. You can therefore adapt the P330 to your requirements on the fly and with a down-time which is second to none.

Backup Power Supply

Each Cajun P330 basic unit comes with a Backup Power Supply (BUPS) connector. If the internal power supply should fail, the Cajun P330 BUPS (available separately,) will automatically supply power to the switch for uninterrupted operation.

Fans

The Cajun P330 base unit fans have integrated sensors which provide advance warnings of fan failure via management.

Network Management Agent (NMA) Redundancy

Each of the integral NMAs in the stack can serve as the stack NMA while other NMAs act as redundant agents in "hot" standby. If the "live" NMA fails then a backup will be activated instantaneously.

Software Download

Safe S/W download procedure – backup code always present.

Cajun P330 Standards Supported

The Cajun P330 complies with the following standards.

IEEE

- 802.3x Flow Control on all ports
- 802.1Q VLAN Tagging support on all ports and 802.1p compatible
- 802.1D Bridges and STA
- 803.2z Gigabit Ethernet ports
- 803.2u Ethernet/Fast Ethernet ports

IETF

- MIB-II - RFC 1213
- RMON - RFC 1757
- SMON - RFC 2613

Durability

- Designed to meet the requirements of TR-NWT-000063 - Network Equipment Building System (NEBS), Generic Equipment Requirements, chapters:
  - 4.4.1 Shock Criteria
  - 4.4.2 Vibration Criteria
  - 5.4.1 Shock and Vibration Test Methods

Cajun P330 Network Management

Lucent realizes the importance of comprehensive network management as a key component of today's networks. Therefore we have provided multiple ways of managing the Cajun P330 to suit your needs.

Cajun P330 Manager

Cajun P330 switches come with free management software as standard. This program, which uses the Lucent CajunView™ graphical interface, allows you to manage a Cajun P330 stack without purchasing additional software. This version of CajunView P330 Manager does not require HP OpenView™.

CajunView

When you need extra control and monitoring or wish to manage other Cajun Campus equipment, then the CajunView network management suite is the answer. This suite provides the ease-of-use and features necessary for optimal network utilization.

The CajunView Suite is available for Windows® 95/NT®.

Cajun P330 Network Monitoring

RMON MIBs - RFC 1757

- RMON support for groups 1,2,3 and 9
  - — Statistics
  - — History
  - — Alarms
  - — Events

SMON MIBs - RFC 2613

- SMON support for groups
  - — Data Source Capabilities
  - — Port Copy
  - — VLAN and Priority Statistics (future).

Port Mirroring

The Cajun P330 provides port mirroring for additional network monitoring functionality. You can filter the traffic and mirror either incoming traffic to the source port or both incoming and outgoing traffic. This allows you to monitor the network traffic you need.

SMON

The Cajun P330 supports Lucent's ground-breaking SMON Switched Network Monitoring, which the IETF has now adopted as a standard (RFC2613). SMON provides an unprecedented top-down monitoring of switched network traffic at the following levels:

- Enterprise Monitoring
- Switch Monitoring
- VLAN Monitoring
- Port-level Monitoring

This top-down approach gives you rapid troubleshooting and performance trending to keep the network running optimally.

Note: CajunView is required to run SMON monitoring.

Note: You need to purchase one SMON License per Cajun P330 Stack

Cajun P333T Front and Rear Panels

Cajun P333T Front Panel

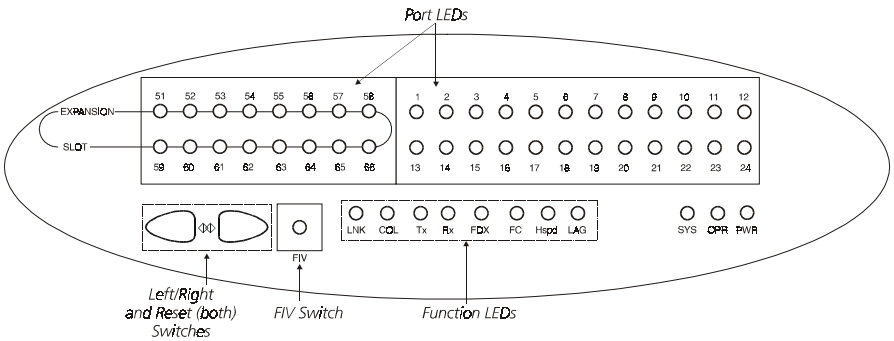
The Cajun P333T front panel contains LEDs, controls, connectors and an expansion sub-module slot, as well as console connector. The status LEDs and control buttons provide at-a-glance information.

The front panel LEDs consist of Port LEDs and Function LEDs. The Port LEDs display information for each port according to the illuminated function LED. The function is selected by pressing the left or right button until the desired parameter LED is illuminated. For example, if the COL LED is illuminated, then all Port LEDs show the collision status of their respective port. If you wish to select the LAG function, then press the right button until the LAG Function LED is lit; if you then wish to select Rx then press the left button several times until the Rx function LED lights.

Cajun P333T front panel are shown below shows the Cajun P33T LEDs, buttons, the Expansion sub-module slot, and the RJ-45 console connector at the bottom right (see Figure 2.1 and Figure 2.2). The LEDs are described in Table 2.1.

Figure 2.1 Cajun P333T Front Panel

Figure 2.2 Cajun P333T LEDs


Port LEDs
EXPANSION
SLOT
51 52 53 54 55 56 57 58
59 60 61 62 63 64 65 66
1 2 3 4 5 6 7 8 9 10 11 12
13 14 15 16 17 18 19 20 21 22 23 24
FIV
LNK COL Tx Rx FDX FC Hspd LAG
SYS OPR PWR
Left/Right and Reset (both) Switches
FIV Switch
Function LEDs

Note: All LEDs are lit during a reset.

Table 2.1 Cajun P333T LED Descriptions

LED Name	Description	LED Status
PWR	Power status	OFF – power is off
		ON – power is on
		Blink – using BUPS only
OPR	CPU operation	OFF – Module is booting
		ON – Normal operation
SYS	System Status	OFF – Module is a slave in a stack
		ON – Module is the master of the stack and the Octaplane and Redundant cable are connected correctly. This LED will also light in Standalone mode.
		Blink – Box is the master of the stack and the long Octaplane cable is not present **or** the stack is in redundant mode
The following Function LEDs apply to ports 1 to 40		
LNK	Port status	OFF – Port disabled
		ON – Port enabled and link OK
		Blink – Port enabled and the link is down
COL	Collision	OFF – No collision or FDX port
		ON – Collision occurred on line
Tx	Transmit to line	OFF – No transmit activity
		ON – Data transmitted on line from the module
Rx	Receive from line	OFF – No receive activity
		ON – Data received from the line into the module

Table 2.1 Cajun P333T LED Descriptions

LED Name	Description	LED Status
FDX	Half/Full Duplex	OFF – Half duplex mode
		ON – Full duplex mode
FC	Symmetric Flow Control	OFF – No flow control. Symmetric Pause mode is *disabled* and/or port is in half duplex mode
		ON – Symmetric Flow Control mode is *enabled* and port is in full duplex mode
Hspd	High Speed	OFF – 10Base-T port or expansion port does not exist
		ON – 100Base-T, 100Base-F, and 1000Base-X port
LAG	Link Aggregation Group (Trunking)	OFF – No LAG defined for this port
		ON – Port belongs to a LAG

Table 2.2 Cajun P330 <- -> Select buttons

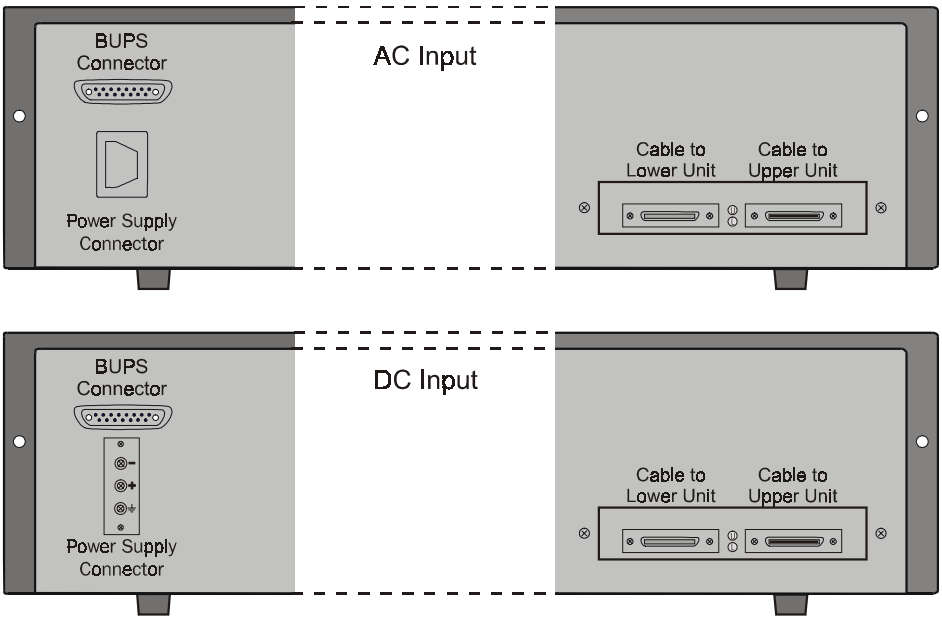
Description	Function
Left/Right	Individual – select LED function (see table above)
Reset module	Press both right and left buttons together for approximately two seconds. All LEDs on module light up until buttons are released
Reset stack	Press both Right and Left buttons together for 4 seconds. All LEDs on stack light up until buttons are released.
FIV	Force Initial Version – boot from backup initial version of the Cajun P330 software, from Bank A (see Note below).

Note: To perform "Force Initial Version" reset the module and at the same tme press the FIV reset button (use an opened paper clip or other pointed object). Let go of the reset buttons first and then let go of the FIV button 1 or 2 seconds later.

Cajun P333T Back Panel

The Cajun P333T back panel contains a stacking sub-module slot, power supply and BUPS connector. Figure 2.3 shows the back panel of the AC switch (top) and the DC switch (bottom) with a stacking sub-module installed.

Figure 2.3 Cajun P333T AC and DC Back Panels



Note: Any further illustrations of the Cajun P333T Back Panel will be that of the AC model Figure 2.3.

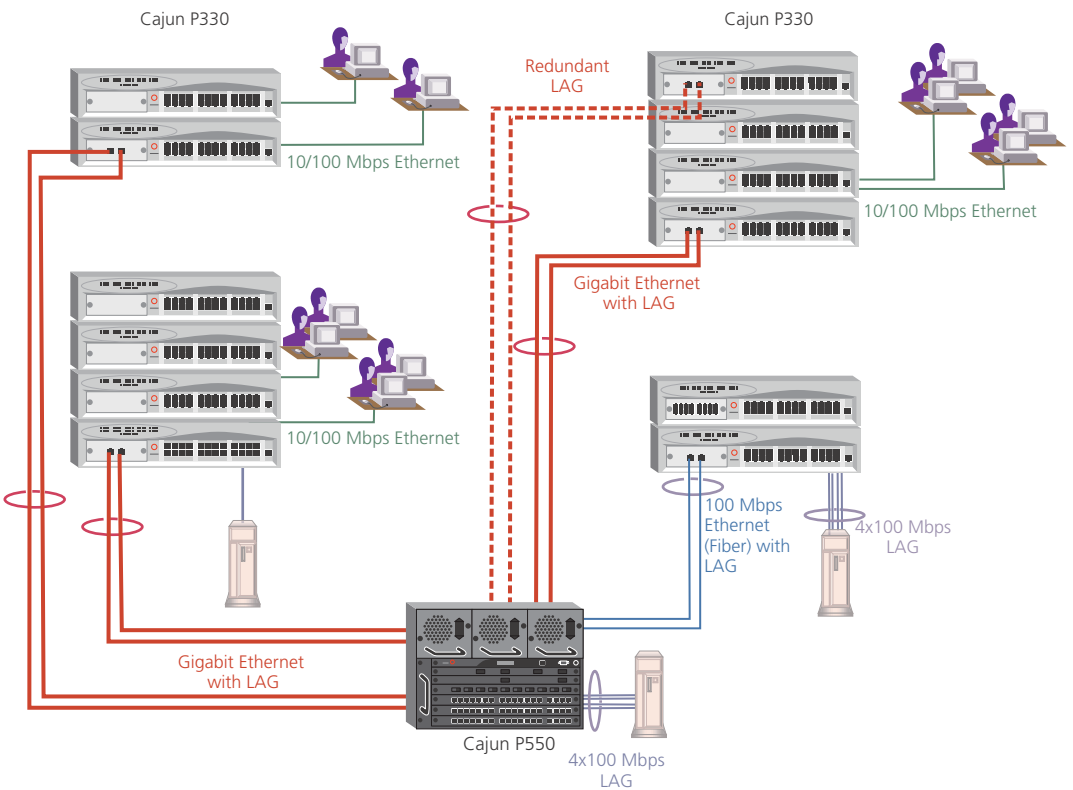
Applications

The following sections describe typical applications for the Cajun P330 in a network with other Cajun Campus products.

Application 1

This application shows Cajun P550 as the network backbone with Cajun P330 stacks as closet devices with LAG and redundant links.

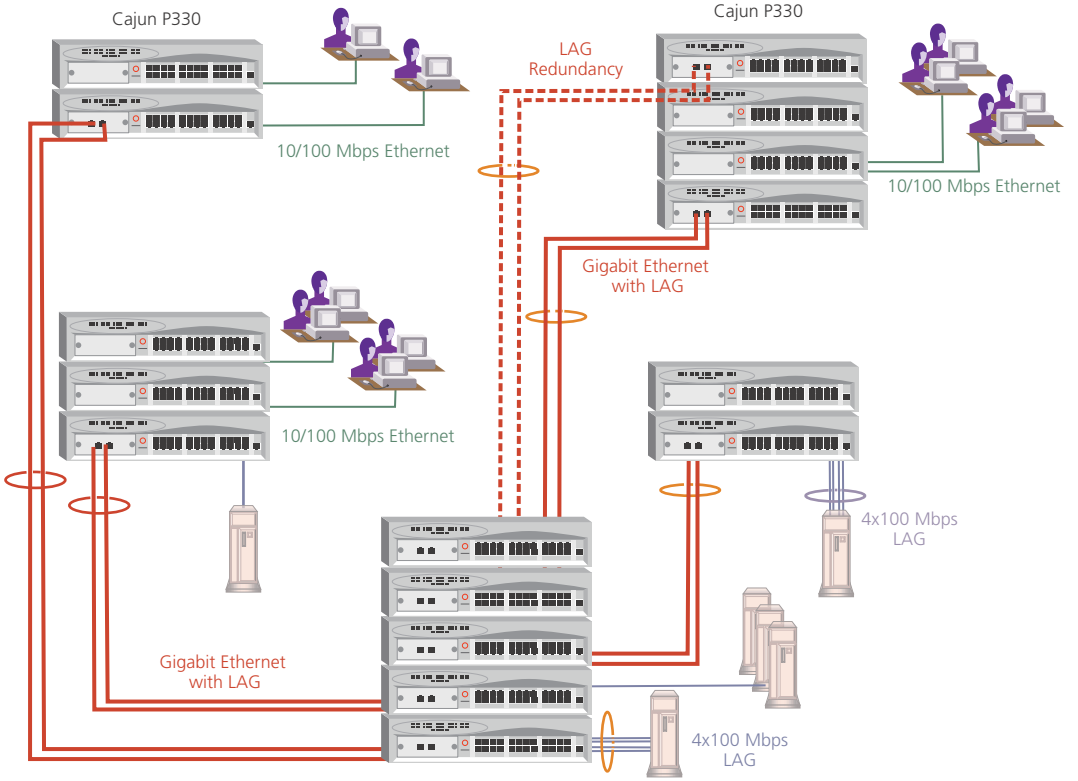
Figure 3.1 Cajun P330 stacks with a Cajun P550 Backbone



Application 2

This application shows a Cajun P330 stack forming the backbone of a Small/ Medium-sized Enterprise (SME) network with CajunP330 stacks as closet devices with LAN and redundant links.

Figure 3.2 Cajun P330 stacks with a Cajun 330 backbone



Installation and Setup

The Cajun P333T is ready to work after you carry out the installation instructions given below. All the Cajun P333T ports provide complete connectivity and no configuration is required to make the system work.

Installing Stacking Sub-modules

Caution: The stacking sub-modules contain components sensitive to electrostatic discharge. Do not touch the circuit board unless instructed to do so.

Installing the Stacking Sub-module in the Cajun P330

1 Remove the blanking plate from the back of the Cajun P330 switch.
2 Insert the stacking sub-module gently into the slot, ensuring that the metal base plate is aligned with the guide rails.
The metal plate of the X330STK (and *not* the PCB) fits onto the guide rails.
3 Press the sub-module in firmly until it is completely inserted into the Cajun P330.
4 Gently tighten the two screws on the side panel of the stacking sub-module by turning the screws.

Note: The Cajun P330 switch must not be operated with the back-slot open; the stacking sub-module should be covered with the supplied blanking plate if necessary.

Positioning

Cajun P333T can be mounted alone or in a stack in a standard 19-inch equipment rack in a wiring closet or equipment room. Up to 10 units can be stacked in this way. When deciding where to position the unit, ensure that:

- It is accessible and cables can be connected easily and according to the configuration rule.
- Cabling is away from sources of electrical noise such as radio transmitters, broadcast amplifiers, power lines and fluorescent lighting fixtures.
- Water or moisture cannot enter the case of the unit.
- Air-flow around the unit and through the vents in the back and sides of the case is not restricted.

Note: Use Octaplane cables to interconnect with other switches.

Rack Mounting

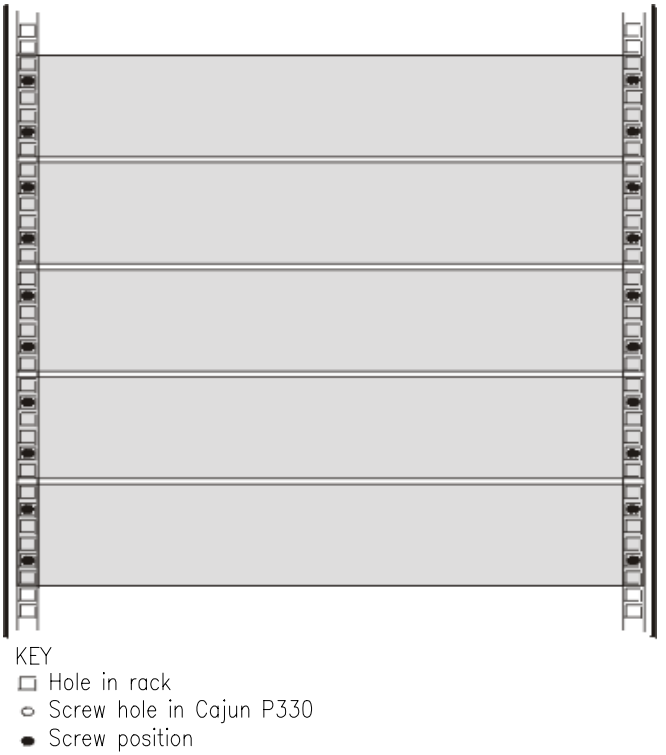
The Cajun P333T case fits in most standard 19-inch racks. Cajun P333T is 2U (88 mm, 3.5″) high.

Warning: Disconnect all cables from the unit before continuing.

Place the Cajun P333T in the rack as follows:

1 Snap open the ends of the front panel to reveal the fixing holes.
2 Insert the unit into the rack. Ensure that the four Cajun P333T screw holes are aligned with the rack hole positions as shown in Figure 4.1.

Figure 4.1 Cajun P333T Rack Mounting



3 Secure the unit in the rack using the screws. Use two screws on each side. Do not overtighten the screws.
4 Snap closed the hinged ends of the front panel.
5 Ensure that ventilation holes are not obstructed.

Connecting Stacked Switches

Note: The two ends of the Octaplane cable terminate with different connectors. Each connector can only be connected to its matching port.

The following cables are used to connect stacked switches:

- Short Octaplane cable (X330SC) – ivory-colored, used to connect adjacent switches (Catalog No. CB0223) or switches separated by a BUPS unit.
- Long Octaplane cable (X330LC) – ivory-colored, used to connect switches from two different physical stacks, or switches separated by a BUPS unit (Catalog No. CB0225).
- Redundant cable (X330RC) – black, used to connect the top and bottom switches of a stack (Catalog No. CB0222).

To connect stacked switches:

1 Plug the light grey connector of the Short Octaplane cable into the port marked "to upper unit" of the bottom Cajun P330 switch.

2 Plug dark grey connector of same Short Octaplane cable to the port marked "to lower unit" in the unit above. The connections are illustrated in Figure 4.3.

3 Repeat Steps 1 and 2 until you reach the top switch in the stack.

Note: If you have split the stack, use the Long Cable instead of the Short Cable where required.

4 If you wish to implement stack redundancy, use the Redundant Cable to connect the the port marked " to lower unit" on the bottom switch to the port marked "to upper unit" on top switch of the stack.

Caution: Do not cross connect two Cajun P333T switches with two Octaplane (light-colored) cables. If you wish to cross-connect for redundancy, use one light-colored Octaplane cable and one black redundancy cable. Figure 4.2 shows an incorrect connection.

Note: You can build a stack of up to 10 Cajun P330 switches. If you do not wish to stack all the switches in a single rack, use long Octaplane cables to connect two physical stacks as shown in Figure 4.3.

Figure 4.2 Incorrect Stack Connection

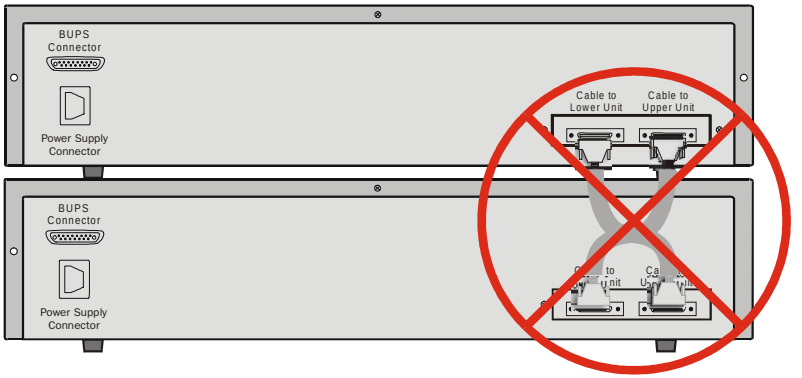
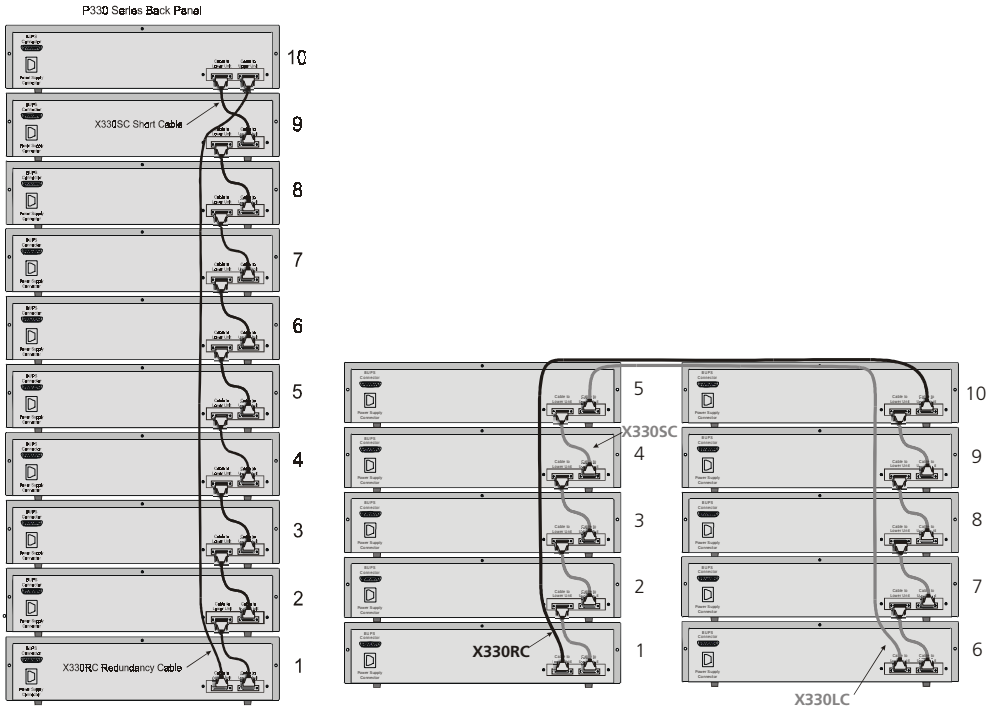


Figure 4.3 Cajun P333T Stack Connections



Installing Expansion Sub-modules

Caution: The expansion sub-modules contain components sensitive to electrostatic discharge. Do not touch the circuit board unless instructed to do so.

Installing the Expansion Sub-module into the Cajun P330

1 Remove the blanking plate or other sub-module (if installed).
2 Insert the sub-module gently into the slot, ensuring that the Printed Circuit Board (PCB) is aligned with the guide rails.
The PCB *not* the metal base plate fits into the guide rail.
3 Press the sub-module in firmly until it is completely inserted into the Cajun P330.
4 Gently tighten the two screws on the front panel of the expansion sub-module by turning the screws.

Removing an Existing Expansion Sub-module

1 Loosen the screws by turning the knobs.
2 Grasp the two knobs one near each side of the front panel, and pull gently but firmly towards yourself.
3 Insert another expansion sub-module or the blanking plate.

Note: The Cajun P330 switch must not be operated with the expansion slot open; the expansion sub-module slot should be covered with the supplied blanking plate if necessary.

Note: Expansion sub-modules are hot swapable and can be inserted or removed in an operating base unit.

Powering On – Cajun P330 Module AC

For the AC input version of the Cajun P330, insert the power cord into the power inlet in the back of the unit. The unit powers up.

1 If you are using a BUPS, insert a power cord from the BUPS into the BUPS connector in the back of the unit. The unit powers up
2 After power up or reset, the Cajun P333T performs a self test procedure.

Powering On – Cajun P330 Module DC

For the DC input version of the Cajun P330, connect the power cable to the switch at the input terminal block.

1 The terminals are marked “+”, “-“ and the IEC 5019a Ground symbol.
2 The size of the three screws in the terminal block is M3.5.
3 The pitch between each screw is 9.5mm.

Warning: Before performing any of the following procedures, ensure that DC power is OFF.

Caution: This product is intended for installation in restricted access areas and is approved for use with 18 AWG copper conductors only. The installation must comply with all applicable codes.

4 Attach the appropriate lugs at the wire end of the power supply cord.
5 Wire the DC power supply to the terminal block.

Warning: The proper wiring sequence is ground to ground, positive to positive (line to L), and negative to negative (neutral to N). Note that the ground wire should always be connected first and disconnected last.

Configuring the Switch

The Cajun P333T may be configured using the text-based "Command Line Interface" (CLI) utility, the stand-alone Cajun P330 Manager or CajunView.

For instructions on the text-based utility, see the CLI chapter.

For instructions on installation of the graphical user interfaces, refer to the "Cajun P330 Manager" appendix. For instructions on the use of the graphical user interfaces, refer to the Manager User's Guide on the Management CD.

Cajun P330 Default Settings

The default settings for the Cajun P330 switch and its ports are determined by the Cajun P330 software. These default settings are subject to change in newer versions of the Cajun P330 software. See the Release Notes for the most up-to-date settings.

Switch Settings

Table 4.1 Default Switch Settings

Function	Default Setting
Cajun P330 IP Address	149.49.32.134
Default Gateway	0.0.0.0
VLANs	VLAN 1
Spanning Tree	Enabled

Port Settings

Table 4.2 Default Port Settings

Function	Default Setting		
	10/100Base-TX ports	100Base-FX ports	1000 Base-X ports
Duplex mode	Full duplex	Full duplex	Full duplex only
Speed mode	100M	100M	1000M
Flow control	Off	Off	No pause
Backpressure	On (only in Half duplex mode)	Not Applicable	Not Applicable
Auto-negotiation	Enable	Not Applicable	Enabled
Administration status	Enable	Enable	Enable
Port VLAN	1	1	1
Tagging mode	Clear	Clear	Clear
Port priority	Regular	Regular	Regular

Functions operate in their default settings unless configured otherwise.

Cabling

Cajun P330 modules include the following types of ports (according to the speed and standard they support): 10Base-T, 100Base-TX, 100Base-FX, 1000Base-SX and 1000Base-LX.

Note: To interconnect Cajun P330 switches with copper wire, crossed cables are required.

- The maximum UTP cable length connected to a 10/100 Mbps port operating as 10Base-T, is 100 m (328 ft.).
- A UTP Category 5 cable must be connected to any 100Base-TX port, via an RJ45 connector. The maximum UTP cable length connected to a 100Base-TX port, or a 10/100 Mbps port operating as 100Base-TX, is 100 m (328 ft.).
- A fiberoptic cable must be connected to any 100Base-FX port, via a pair of SC connectors. The maximum fiber cable length connected to a 100Base-FX port is 412 m (1,352 ft) when operating in half duplex, and 2 km (6,562 ft) when operating in full duplex.

Appropriate cables are available from your local supplier.

Table 4.3 Gigabit Ethernet Cabling

Gigabit Interface	Fiber Type	Diameter (µm)	Modal Bandwidth	Maximum Distance (m)
1000BASE-SX	MM	62.5	160	220
1000BASE-SX	MM	62.5	200	275
1000BASE-SX	MM	50	400	500
1000BASE-SX	MM	50	500	550
1000BASE-LX	MM	62.5	500	550
1000BASE-LX	MM	50	500	550
1000BASE-LX	SM	9	NA	5,000
1000BASE-SLX	SM	9	NA	10,000

*1000BASE-LX over Multimode fiber requires a special Patch cord cable which you can obtain from your local cable supplier.

Connecting to the Serial Port

Cajun P333T has one serial port on the front of the switch for connecting a terminal, a terminal emulator, or a modem using the supplied adapter.

Note: Modem connection requires a modem adapter which is supplied by Lucent upon request.

The RJ-45 port on the front of the switch is labeled “Console”, and may be used to configure the switch using the built-in Command Line Interface (CLI, Terminal Emulation). In the future, this connector will also be used for out-of-band SNMP management, via a modem.

The port settings are as follows:

- Baud Rate - 9600 bps
- Character Size - 8
- Parity - None
- Stop Bit - 1
- Flow Control - None
- We recommend using a VT-100 terminal to enable access to all CLI features.

The terminal connected to the serial port must be configured with the same settings; this setting will work with any PC COM port over a DB9 to RJ45 connector.

Assigning Cajun P330's IP Stack Address

Note: All Cajun P330 switches are shipped with the same default IP address. You must change the IP address of the master Cajun P330 switch in a stack in order to guarantee that the stack has its own unique IP address in the network.

Changing the IP Address using Command Line Interface (CLI, Terminal Emulation)

Use the CLI to assign the Cajun P330 stack an IP address and net mask. The CajunView station may establish communications with the stack once this address had been assigned and the stack inserted into the network.

1 Establish a serial connection by connecting a terminal to the master Cajun P330 switch as described in the "Command Line Interface" chapter.
2 When you see the "Welcome to P330" menu and are prompted for a password, enter the User Level password **`norm`**
3 At the `Console>` prompt, enter **`enable`** to enter the Privileged level.
4 Enter the password. The default is **`enable`**.
5 At the `Console>(enable)` prompt, type:
`set interface <inband> <vlan> <ip_address> <netmask>`
Replace **`<vlan>`**, **`<ip_address>`** and **`<netmask>`** with the VLAN, IP address and net mask of the stack.
6 Press Enter to save the IP address and net mask.
7 At the `Console>(enable)` prompt, enter **`reset`** and press Enter to reset the stack. After the Reset, perform login to Privileged level again as described above.
8 At the `Console>(enable)` prompt, enter **`set ip route <dest><gateway>`** where you replace **`<dest>`** and **`<gateway>`** with the destination and gateway IP addresses.
9 Press Enter to save the destination and gateway IP addresses.

Note: If there are any errors, the new configuration settings will not be saved. To save the new configuration settings, you must correct the errors by repeating the command.

10 At the `Console>(enable)` prompt, type **`exit`** or **`disable`** with the password (default password **`norm`**) to exit the Privileged level, and press Enter to confirm the command. The prompt changes to `Console>` to indicate that you are in User level.
11 Exit the CLI session.
12 Insert the Cajun P330 stack into your network.

Chapter 5

Cajun Campus CLI (Command Line Interface)

This chapter provides instructions for the configuration of your Cajun P330 using the text-based Cajun Campus Command Line Interface (CLI or Terminal Emulation). You can also configure your Cajun P333T using the Cajun P330 Manager with its graphical user interface (see Appendix C).

The configuration procedure involves establishing a Telnet session or a serial connection and then using the Cajun P333T's internal CLI. The CLI is command-line driven and does not have any menus. To activate a configuration option, you must type the desired command at the prompt and press Enter.

Conventions Used

The following conventions are used in this document to convey instructions and information:

- Commands are in boldface
- Variables that you supply are in pointed brackets <>
- Optional keywords are in square brackets [ ]
- Alternative but mandatory keywords are grouped in braces { } and separated by a vertical bar |
- If you enter an alphanumeric string of two words or more, for example in the Set system location command on Page 48, enclose the string in inverted commas.
- Information displayed on screen is displayed in `text` font

Establishing a Serial Connection for Configuration

Perform the following steps to connect a VT-100 terminal or PC with VT-100 emulation to the Cajun P330 master switch Console port for configuration of stack parameters:

1 Use the serial cable supplied to attach the RJ-45 console connector to the Console port of the Cajun P330 master switch (indicated by a lit SYS LED) and the DB-9 connector to the serial (COM) port on your PC/terminal.

2 Make sure that the serial port settings on the PC are 9600 baud, 8 bits, 1 stop bit and no parity.

3 If you connected a PC, run a VT-100 emulation session. (You can use the Windows® HyperTerminal.)

4 When you see the "Welcome to P330" menu and are prompted for a password, enter the User Level password **`norm`**

Establishing a Telnet Session

1 Connect your PC to the network

2 Verify that you can communicate with the Cajun P330 using Ping to the IP of the Cajun P330. If there is no response using Ping, check the IP address and default gateway of both the Cajun P330 and the PC.

Note: The Cajun P330 default IP address is 149.49.32.**134** and default subnet mask is 255.255.255.0.

3 From the Microsoft Windows® taskbar of your PC click **Start** and then **Run** (or from the DOS prompt of your PC), then start the Telnet session by typing:
`telnet` *`<Cajun_P330_IP_address>`*
For example: **`telnet 149.49.32.134`**

Note: One of the possible reasons that you cannot establish a Telnet session to the Cajun P330, may be because there is already a session in progress.

4 Enter the Cajun P330 User level password. The default is `norm` in lower case letters (do NOT use uppercase letters). The `Console>` prompt will appear when you have established communications with the Cajun P330.

5 Enter the Cajun P330 Privileged level by typing **`enable`**

6 Enter the Cajun P330 Privileged level password. The default is **`enable`** in lower case letters (do NOT use uppercase letters). The `Console>(Enable)` prompt will appear.

You can now configure the Cajun P330 stack and change its default IP address. See the Section “Running the CLI” below.

Running the CLI

After running Telnet or connecting to the Console port, press Enter and the `Console>` prompt displays.

The command-line interface provides a set of commands that you can use to display and configure the Cajun P330 stack parameters. The commands are arranged in a hierarchy such that a command contains a group of related functions.

To perform a command, you will need to specify the command followed by the full hierarchical path. For example:

```
Console>show ip route
```

This command shows routes in the routing table

Alternatively, you can descend the hierarchy by typing:

```
Console>show
```

This will cause the prompt to change, displaying the position in the hierarchy:

```
Console(show)>
```

You can descend the hierarchy further by typing:

```
Console (show)> ip
```

This will cause the prompt to change:

```
Console (show - ip)>
```

You can now perform the command simply by typing **`route`** , as follows:

```
Console (show - ip)> route
```

The advantage of descending the hierarchy is that you can perform multiple related commands without having to type them out in full (that is, specifying their full path).

You can use the following commands to navigate the hierarchy:

- up - returns you to the previous level in the hierarchy
- top- returns you to the root of the hierarchy

Note: Refer to the section “Navigation, Cursor Movement and Shortcuts” on Page 28 for general information on the CLI user interface.

Security Levels

There are three security access levels – User, Privileged and Supervisor. The user access level is a general access level used to show system parameter values.

The Privileged level is used by site personnel to access stack configuration options.

The Supervisor level is used to define passwords used to access the Privileged level.

A password is required to access the Privileged level and Supervisor level and gain access to all the commands.

Entering the User Level

The User level is accessed upon entry to the Cajun Campus CLI.

Entering the Privileged Level

To enter the Privileged level, use the login command and enter the password. The default password is `enable`. However, it may be changed with the `set enablepass` command.

```
Console> enable
Enter password: enable
```

The prompt `Console>(enable)` displays indicating that you are in Privileged level.

Exiting the Privileged Level

To exit the Privileged level and return to the User level, type the command **`exit`** (no password is required). The **`disable`** command (default password `norm` required) returns you from the Privileged level to the User level.

Entering the Supervisor Level

To enter the Supervisor level, use the login command and enter the password. The default password is `super`. The default password can be changed using the `set superpass` command.

```
Console> super
Enter password: super
```

The prompt `Console(super)#` displays indicating that you are in Supervisor level.

Exiting the Supervisor Level

To exit the Supervisor level and return to the Privileged level, **`exit`** (no password is required). The **`disable`** command (default password `norm` required) returns you from the Supervisor level to the User level.

Note: If keyboard activity is not detected for the amount of time set using the `set timeout <timeout>` command in Telnet mode, you are automatically removed from the Privileged level or Supervisor level and returned to the User level.

General Commands

Top and Up commands

The **`Up`** command moves you up to the next highest level in the CLI command hierarchy. The **`Top`** command moves you to the highest level.

Retstatus command

Use the **`retstatus`** command to show whether the last CLI command you performed was successful or not (shows the return status of the previous command).

The syntax for this command is: **`retstatus`**

Example:

```
Console>(enable) set port negotiation 2/4 disable
Link negotiation protocol disabled on port 2/4.
Console>(enable) retstatus
Succeeded
Console>(enable)
```

Tree command

The **`Tree`** command displays the commands that are available at your current location in the CLI hierarchy.

The syntax for this command is: **`tree`**

Example:

```
Console (super)# tree
terminal
width
length
Console (super)#
```

Navigation, Cursor Movement and Shortcuts

The CLI contains a simple text editor with these functions:

Table 5.1 Navigation, Cursor Movement and Shortcuts

Keyboard	Functions
Backspace	Deletes the previous character
Up arrow/Down arrow	Scrolls back and forward through the command history buffer
Left arrow/Right arrow	Moves the cursor left or right
Tab	Completes the abbreviated command. Type the minimum number of characters unique to the command. An exception is the Reset System command which you must type in full.
Enter	Executes a single-line command

Getting Help

On-line help may be obtained at any time by entering a question mark (**?**) or the word **help** on the command line. To obtain help for a specific command type the command followed by a space and a question mark.
For example, `Console>show ?`.

Command Syntax

Commands are not case-sensitive. That is, uppercase and lowercase characters may be interchanged freely.

Command Abbreviations

All commands and parameters in the CLI can be truncated to an abbreviation of any length, as long as the abbreviation is not ambiguous. For example, `version` can be abbreviated `ver`.

For ambiguous commands, type the beginning letters on the command line and then use the Tab key to toggle through all the possible commands beginning with these letters.

Commands, Parameters and Default Settings

This section provides all the CLI commands, parameters and their default values. Not all groups, parameters and commands are available when the Cajun P330 boots up from its INIT software.

Command Hierarchy

Table 5.2 shows the command hierarchy for User level commands. User level commands are also available from the Privileged and Supervisor levels.

The Privileged and Supervisor level commands are identical with one exception: the Supervisor level contains the set password command for the User level. Table 5.3 shows the command hierarchy for Privileged level. Table 5.4 shows the hierarchy for the Supervisor level.

How Commands are Organized

Command descriptions are organized into the groups in the command hierarchy and the page number shown in Table 5.2, Table 5.3, and Table 5.4:

Table 5.2 User Level Command Hierarchy

Command Hierarchy				See page
Console>	super			33
	enable			33
	show	time		33
		timeout		33
		timezone		33
		ip	route	33
		ntp		34
		system		34
		image	version	34
		snmp		35
		interface		36
		port		36
		module		37
		flow control		38
		cam	port	39
		cam	mac	39
		trunk		40
		spantree		41
		license		56
		log		42
		download	status	43

Table 5.3 Privileged Level Command Hierarchy

Command Hierarchy				See page
Console (enable)	super			33
	disable			44
	set	enablepass		44
		password		44
		logout		45
		ntp	server	45
		ip	route	45
		snmp	community	46
			trap	47
		system	location	48
			name	48
			contact	49
		interface		49
		port	level	49
			negotiation	50
			enable	50
			disable	51
			speed	51
			duplex	51
		VLAN		52
		flowcontrol		53
		trunk		54

Table 5.3 Privileged Level Command Hierarchy

Command Hierarchy				See page
		spantree	enable	55
			disable	55
			priority	55
		License		56
	show	see Table 5.2		
	sync	time		56
	get	time		56
	clear	ip	route	56
		snmp	trap	57
		VLAN		57
		cam		57
		log		58
	download			58
	reset			58
	session			58

Table 5.4 Supervisor Level Command Hierarchy

Command Hierarchy			See page
Console (super)#	set	defpass	60
		superpass	60
	show	see Table 5.2	
	set	see Table 5.3	

User Level Commands

Super command

The super command is used to access the Supervisor level. In this level, additional commands are available. The (super) prompt indicates that the system is in Supervisor level and that commands can be entered.

The syntax for this command is: **super**

Example

```
Console> super
Enter password: super
Console (super)#
```

Enable Command

The enable command is used to activate Privileged level. In the Privileged level, additional commands are available, and certain commands display additional information. The (enable) in the prompt indicates that the system is in Privileged level and that commands can be entered.

The syntax for this command is: **enable**

Example:

```
Console> enable
Enter password: enable
Console> (enable)
```

Show commands

Show time command

Use the show time command to display the current stack time.

The syntax for this command is: **show time**

Show timeout command

Use the show timeout command to display the amount of time the CLI can remain idle before timing out. If the result is 0, there is no timeout limit.

The syntax for this command is: **show timeout**

Show timezone command

Use the show timezone command to display the current stack timezone.

The syntax for this command is: **show timezone**

Show ip route command

Use the show ip route command to display IP routing table entries.

The syntax for this command is: **`show ip route`**

Example:

```
Console> show ip route
```

Destination	Gateway
149.49.1.1	172.20.22.201
190.20.0.0	172.20.22.202
172.20.0.0	172.20.22.96

```
Console>
```

Show ntp command

Use the show ntp command to display the address of the ntp server.

The syntax for this command is: **show ntp**

Show system command

Use the show system command to display the up time, system name, location, and contact person.

The syntax for this command is: **show system**

Example:

```
Console> show system
```

Uptime d, h:m:s		
0,3:47:33		
System name	System location	System contact
Admin	Bld 3	Allan

Show image version command

Use the show image version command to display the software version of the image on both Banks of a specified module.

The syntax for this command is: **show image version** [mod_num]

mod_num	(Optional) Number of the module to display its image version

If a module number is not specified, the image version of the all modules will be displayed.

Example:

```
Console> show image version
```

Mod	Module-Type	Bank	Version
-------	----------	-------	----------
1.1.	24x10/100Base-T with optional expansion slot	A	1.0.2
1.2.	24x10/100Base-T with optional expansion slot	B	1.0.2

Show snmp command

Use the show snmp command to display SNMP information.

The syntax for this command is: **show snmp**

Example:

```
Console> show snmp
```

Community-Access	Community-String
_____	_____
read-only	public
read-write	private
trap	secret
Trap-Rec-Address	Traps Enabled
----------	----------
192.122.173.42	config, fault etc

```
Console>
```

Show interface command

Use the show interface command to display information on network interfaces.

The syntax for this command is: **`show interface`**

Example:

To display the interface:

```
Console>show interface
IP Addresses & Netmasks
-----------------------
Inband, vlan 1, IP address: 149.49.43.210, netmask: 255.255.255.0
Console>
```

Show port command

Use the show port command to display port status.

The syntax for this command is: **show port** [mod_num[/port_num]]

mod_num	(Optional) Number of the module. If you do not specify a number, the ports on all modules are shown.
port_num	(Optional) Number of the port on the module. If you do not specify a number, all the ports on the module are shown.

Example:

To display the status for port 4 on module 3:

```
Console> show port 3/4
```

Port	Status	VLAN	Level	Neg	Duplex	Speed	Type
----	-------	-----	------	----	-------	-------	------
3/4	disabled	203	normal	enable	full	100Mb	100BaseT

```
Console>
```

Show Port Output Fields

Field	Description
Port	Module and port number
Status	Status of the port (connected, faulty, disabled)
VLAN	VLAN ID of the port
Level	Priority level of the port (normal or high)
Neg	The negotiation status of the port (enable, disable)
Duplex	Duplex setting for the port (fdx, hdx)
Speed	Speed setting for the port (10, 100).
Type	Port type, for example, 10BaseT, 10BaseFL, 100BaseTX, 100BaseFX MM, 100BaseFX SM, 10/100BaseTX

Show module command

Show module command

Use the show module command to display module status and information. For each module with an expansion sub-module installed, both module and sub-module type and information are shown.

The syntax for this command is: **`show module`** `[mod_num]`

mod_num	(Optional) Number of the module. If you do not specify a number, all modules are shown.

Example

```
Console> show module
```

Mod	Type	Ports	Serial-Num	C/S	Sw
1	Cajun P333T	24	007486003	1.0	1.0.2

Mod	Sub-Type	Sub-Ports	Sub-C/S
1	P330F2	2	1.0

Output Fields

Field	Description
Mod	Module number.
Module-Type	Module Type
Ports	Number of ports on the module.
Serial-Num	Serial number of the module.
C/S	(Hardware) Configuration Symbol of the module
Sw	Software version on the module.

Show flowcontrol command

Use the show port flowcontrol command to display per-port status information related to flow control.

The syntax for this command is:

```
show flowcontrol [mod_num/port_num]
```

mod_num	(Optional) Number of the module.
port_num	(Optional) Number of the port on the module. If you do not specify a number, filters configured on all the ports on the module are shown.

Example:

This example shows how to display the flow-control port status and statistics:

```
Console> show flowcontrol
```

Port	Send-Flowcontrol		Receive-Flowcntl	
	Admin	Oper	Admin	Oper
-----	----------	------	--------	--------
3/2	off	off	off	off
3/3	on	on	off	off

Output Fields

Field	Description
Port	Module and port number.
Send-Flowcontrol-Admin	Send flow-control administration. Possible settings: • on indicates the local port sends flow control to the far end; • off indicates the local port does not send flow control to the far end;
Send-Flowcontrol-Oper	Send flow-control operation mode.
Receive-Flowcntl-Admin	Receive flow-control administration. Possible settings: • on indicates the local port requires the far end to send flow control; • off indicates the local port does not allow the far end to send flow control;
Receive-Flowcntl- Oper	Receive flow-control operation mode.

Show cam command

Use the show cam command to display the CAM table for a specific port or MAC_Addr. The syntax for this command is:

```
show cam mod_num | port_num
show cam mac mac_addr
```

mod_num	Number of the module.
port_num	Number of the port.
mac_addr	MAC address.

```
Console> show cam mac 00-00-81-01-23-45

 Dest MAC/Route             Destination Ports
 --------------             ---------------
 00-00-81-01-23-45          2/9
 00-00-81-01-23-45          2/10

Total Matching CAM Entries = 2
Console>
```

Show trunk command

Use the show trunk command to display VLAN tagging information for the switch.

The syntax for this command is:

```
show trunk [mod_num[/port_num]]
```

mod_num	(Optional) Number of the module.
port_num	(Optional) Number of the port.

To display the VLAN tagging configuration for a specific port, specify the module and port number of the port you want to display.

Example:

To display tagging information for the switch:

```
Console> (enable) show trunk

 Port      Mode      Native VLAN      VLANs allowed on trunk

 ------    ------    ---------        -------------------------
  4/9      dot1q     1                1-3071
  4/10     off       1                1-3071

Console> (enable)
```

To display tagging information for a specific port:

```
Console> (enable) show trunk 4/5

 Port      Mode      Native VLAN      VLANs allowed on trunk
 ------    ------    -----------      ------------------------
  4/5      off       1                1-3071

Console> (enable)
```

Show trunk command output fields:

Field	Description
Port	Module and port number(s).
Mode	Tag status of the port (on - dot 1Q tagging mode, off - clear mode).
Native VLAN	Number of the port VLAN in the tagged link (the VLAN for which untagged traffic can be transmitted and received over the link).
VLANs allowed on trunk	Range of VLANs allowed (1 to 3071).

Show spantree command

Use the show spantree command to display spanning-tree information.

The syntax for this command is:

show spantree mod_num [port_num]

mod_num	Number of the module.
port_num	(Optional) Number of the port on the module.

Example:

This example shows how to display the spanning-tree configuration:

```
Spanning tree enabled
Designated Root             00-40-0b-8f-8b-ec
Designated Root Priority    32768
Designated Root Cost        0
Designated Root Port        1/0
Root Max Age   6  sec    Hello Time 2
Bridge ID MAC ADDR          00-40-0b-8f-8b-ec
Bridge ID Priority          32768

 Port      Port-State  Cost  Priority
 --------  ----------  ----  -------
  1003     inactive    80    32

Console>
```

Output Fields:

Field	Description
Spanning tree	Status of whether Spanning-Tree Protocol is enabled or disabled.
Designated Root	MAC address of the designated spanning-tree root bridge.
Designated Root Priority	Priority of the designated root bridge.
Designated Root Cost	Total path cost to reach the root.
Designated Root Port	Port through which the root bridge can be reached (shown only on nonroot bridges).
Root Max Age	Amount of time a BPDU packet should be considered valid.
Hello Time	Number of times the root bridge sends BPDUs.
Bridge ID MAC ADDR	Bridge MAC address used in the sent BPDUs.
Bridge ID Priority	Bridge priority.
Port	Port number.
Port-State	Spanning-tree port state (disabled, inactive, not-connected, blocking, listening, learning, forwarding, bridging, or type-pvid-inconsistent).
Cost	Cost associated with the port.
Priority	Priority associated with the port.

Show log command

Use the show log command to display the logfile.

The syntax for this command is: **`show log`** `[mod_num]`

mod_num	Number of the module to display its download process.

Show download status command

Use the show download command to display the status of the download process. One session of download is active on the system.

The syntax for this command is: **show download status** [mod_num]

mod_num	Number of the module to display its download process.

If a module number is not specified, the status of all modules will be displayed.

Example:

```
Console>(enable) show download status

Mod   Bank     Download State    Activity Status        Download Size
----  ------   --------------    --------------------   -----------
1     A        tftp-running-ip   Downloading            46233


Mod   Version  Host              File
----  ------   -------------     --------------------
1     1.0.2    149.49.1.1        /users/download/
                                 p330t
```

Privileged Level Commands

This Level includes all the commands of the User Level.

Disable command

Use the disable command to return to User level from Privileged level.

The syntax for this command is: **`disable`**

Example:

```
Console> (enable) disable
Enter password:
Console>
```

Set commands

Set enablepass command

Use the set enablepass command to change the password for the Privileged level of the CLI. The command prompts you to enter the old password. If the password you enter is valid, you are prompted to enter a new password and to verify the new password. The password should contain at least four characters.

The syntax for this command is: **`set enablepass`**

Example:

```
Console> (enable) set enablepass
Enter old password: <old_password>
Enter new password: <new_password>
Retype new password: <new_password>
Password changed.
Console> (enable)
```

Set password command

Use the set password command to change the login password on the CLI. The command prompts you to enter the old password. If the password is valid, you are prompted to enter a new password and to verify the new password.

The syntax for this command is: **`set password`**

Example:

```
Console> (enable) set password
Enter old password: <old_password>
Enter new password: <new_password>
Retype new password: <new_password>
Password changed.
Console> (enable)
```

Set logout command

The set logout command is used to set the number of minutes until the system automatically disconnects an idle session.

The syntax for this command is: **`set logout`** `<timeout>`

<timeout>	Number of minutes (0 to 999) until the system automatically disconnects an idle session. Setting the value to 0 disables the automatic disconnection of idle sessions Default = 15

Examples:

To set the number of minutes until the system disconnects an idle session automatically:

```
Console> (enable) set logout 20
Sessions will be automatically logged out after 20 minutes of
idle time.
Console> (enable)
```

To disable the automatic disconnection of idle sessions:

```
Console> (enable) set logout 0
Sessions will not be automatically logged out.
Console> (enable)
```

Set ntp server command

The set ntp server command is used to set the ntp server address.

The syntax for this command is: **`set ntp server`** `<ip>`

ip	IP address of the ntp server.

Set ip route command

Use the set ip route command to add IP addresses to the IP routing table. You can configure one default gateway up to ten-(10) default gateways for P330 family.

The syntax for this command is: **`set ip route`** `destination gateway`

destination	IP address of the network, or specific host to be added
gateway	IP address of the router.

Example:

These examples show how to add three default routes to the IP routing table:

```
Console> (enable) set ip route 149.49.48.0 192.122.173.42
Route added.
Console> (enable)

Console> (enable) set ip route 149.49.84.55 192.122.173.43
Route added.
Console> (enable)

Console> (enable) set ip route 10.0.0.0 192.122.173.44
Route added.
Console> (enable)
```

Set snmp community command

Use the set snmp community command to set SNMP communities and associated access types.

There are three configurable SNMP communities, one for each access type. If you do not specify the community string, the community string configured for that access type is cleared. One community string should be configured for each access type.

The syntax for this command is:

set snmp community <read-only|read-write|trap>[community_string]

read-only	Assign read-only access to the specified SNMP community.
read-write	Assign read-write access to the specified SNMP community.
trap	Assign SNMP community to trap.
community_string	(Optional) Name of the SNMP community.

The default configuration has the following communities and access types defined:
read-only---public
read-write---public
public-trap---public

Examples:
To set read-write access to the SNMP community called yappledapple:

```
Console> (enable) set snmp community read-write yappledapple
SNMP read-write community string set.
Console> (enable)
```

To clear the community string defined for read-only access:

```
Console> (enable) set snmp community read-only
SNMP read-only community string cleared.
Console> (enable)
```

Set snmp trap command

Use the set snmp trap command to enable or disable the different SNMP traps on the system or to add an entry into the SNMP authentication trap receiver table. First add the `rcvr_addr` and then change the trap configuration.
The syntax for these commands is:

```
set snmp trap rcvr_addr
set snmp trap [rcvr_addr] <enable|disable>[all|config|fault]
```

enable	Activate SNMP traps
disable	Deactivate SNMP traps
all	(Optional) Specify all trap types
config	(Optional) Specify the ConfigChange trap from the TRAP-MIB.
fault	(Optional) Specify the Fault trap from the TRAP-MIB.
rcvr_addr	IP address or IP alias of the system to receive SNMP traps

Examples:
To enable SNMP ConfigChange traps to a specific manager:

```
Console> (enable) set snmp trap 192.122.173.42 enable config
```

```
SNMP config change traps enabled.
Console> (enable)
```

To enable all traps to a specific manager:

```
Console> (enable) set snmp trap 192.122.173.42 enable all
All SNMP traps enabled.
Console> (enable)
```

To disable SNMP config traps to a specific manager:

```
Console> (enable) set snmp trap 192.122.173.42 disable config
SNMP config traps disabled.
Console> (enable)
```

To add an entry in the SNMP trap receiver table with default:

```
Console> (enable) set snmp trap 192.122.173.42
SNMP trap receiver added.
Console> (enable)
```

Set system location command

Use the Set system location command to set the mib2 system location MIB variable.

The syntax for this command is (a string of 2 words or more must be type inside inverted commas – e.g. 'Operations Floor'):

set system location [string]

string	location string. The location is cleared if this field is blank.

Set system name command

Use the Set system name command to set mib2 system name MIB variable.

The syntax for this command is:

set system name [string]

`string`	location string. The location is cleared if this field is blank.

Set system contact command

Use the Set system contact command to set mib2 system contact MIB variable

The syntax for this command is:

set system contact [string]

string	location string. The location is cleared if this field is blank.

Set interface command

Use the set interface command to configure the in-band interfaces on the Master agent of the stack.

The syntax for this command is:

```
set interface [name][vlan][ip_addr][netmask]
```

name	interface name (“inband” used for Master agent)
vlan	the number of the VLAN to be assigned to the interface
ip_addr	IP address
netmask	Subnet mask

Set port level command

Use the set port level command to set the priority level of a port or range of ports on the switching bus. Packets traveling through a port set at normal priority should be served only after packets traveling through a port set at high priority are served.

The syntax for this command is:

```
set port level [mod_num/port_num][normal|high]
```

mod_num	Number of the module.
port_num	Number of the port on the module.
normal	Set the port priority to regular.
high	Set the port priority to high.

Example

To set the priority level for port 2 on module 1 to high:

```
Console> (enable) set port level 1/2 high
Port 1/2 port level set to high.
Console> (enable)
```

Set port negotiation command

Use the set port negotiation command to enable or disable the link negotiation protocol on the specified port. This command applies to Fast Ethernet or Gigabit Ethernet ports. When negotiation is enabled, the speed and duplex of the Fast Ethernet ports are determined by auto-negotiation. If negotiation is disabled, the user can set the speed and duplex of the Fast Ethernet ports.

The syntax for this command is:

```
set port negotiation [mod_num/port_num][enable | disable]
```

mod_num	Number of the module.
port_num	Number of the port on the module.
enable	Enable the link negotiation protocol.
disable	Disable the link negotiation protocol

Example:

To disable link negotiation protocol on port 1, module 4:

```
Console> (enable) set port negotiation 4/1 disable
Link negotiation protocol disabled on port 4/1.
Console> (enable)
```

Set port enable command

Use the set port enable command to enable a port or a range of ports.

The syntax for this command is: **set port enable** [mod_num/port_num]

mod _num	Number of the module
port_num	Number of the port.

Example

To enable port 3 on module 2:

```
Console> (enable) set port enable 2/3
Port 2/3 enabled.
Console> (enable)
```

Set port disable command

Use the set port disable command to disable a port or a range of ports (see 4.1 for range rules).

The syntax for this command is: **set port disable** [mod_num/port_num]

mod _num	Number of the module
port_num	Number of the port.

Example:

```
Console> (enable) set port disable 5/10
Port 5/10 disabled.
Console> (enable)
```

Set port speed command

Use the set port speed command to configure the speed of a port or range of ports. You can configure the speed of a Ethernet of Fast Ethernet interface only. You can configure Ethernet or Fast Ethernet interfaces on the 10/100-Mbps Ethernet switching module to either 10 Mbps or 100 Mbps. In autonegotiation mode, the port's speed is determined by autonegotiation. An error message is generated if you attempt to set the speed type to 10 or 100 when autonegotiation is enabled.

The syntax for this command is:

set port speed [mod_num/port_num][value]

mod_num	Number of the module.
port_num	Number of the port on the module.
1|2	Set a port speed to 10, 100 Mbps.

Examples:

To configure port 2 on module 2 port speed to 10 Mbps:

```
Console> (enable) set port speed 2/2 1
Port 2/2 speed set to 10 Mbps.
Console> (enable)
```

Set port duplex command

Use the set port duplex command to configure the duplex type of an Ethernet or Fast Ethernet port or range of ports.

You can configure Ethernet and Fast Ethernet interfaces to either full duplex or half duplex. The duplex status of a port in autonegotiation mode is determined by autonegotiation. An error message is generated if you attempt to set the transmission type of autonegotiation Fast Ethernet ports to half- or full-duplex mode.

The syntax for this command is:

```
set port duplex [mod_num/port_num][full | half]
```

mod_num	Number of the module.
port_num	Number of the port on the module.
full	Keyword to specify full-duplex transmission.
half	Keyword to specify half-duplex transmission.

Example:

To set port 1 on module 2 to full duplex:

```
Console> (enable) set port duplex 2/1 full
Port 2/1 set to full-duplex.
Console> (enable)
```

Set VLAN command

Use the set VLAN command to assign the port's VLAN. If adding a new VLAN, the VLAN number must be within the range 1 to 3071.

The syntax for this command is:

```
set vlan [VLAN_num][module/port]
```

VLAN_num	Number identifying the VLAN.
mod_num	Number of the module.
port_list	Number(s) of the port(s) on the module belonging to the VLAN

Example:

To set VLAN 850 to include ports 4 through 7 on module 3.

```
Console> (enable) set VLAN 850 3/4-7
VLAN 850 modified.
VLAN  Mod/Ports
---- ----------------------
850   3/4-7
Console> (enable)
```

Set flowcontrol command

Use the set flowcontrol command to set the send/receive flow-control frames (whether proprietary or IEEE 802.3x) for a full duplex module port. Each direction can be configured separately.

This command is supported on Fast and Gigabit Ethernet switching ports.

The syntax for this command is:

set flowcontrol [receive | send | all][mod_num/port_num][off | on|prop]

receive	Indicate whether the port can receive administrative status from a remote device. *Available only for Gigabit Ethernet modules with negotiation set to off.*
send	Indicate whether the local port can send administrative status to a remote device. *Available only for Gigabit Ethernet modules with negotiation set to off.*
all	Send and receive (symmetric flow control).
mod_num	Number of the module.
port_num	Number of the port on the module.
off	Used with receive to turn off an attached device's ability to send flow-control packets to a local port. Used with send to turn off the local port's ability to send administrative status to a remote device.
on	Used with receive to require that a local port receive administrative status from a remote device. Used with send, the local port sends administrative status to a remote device.
prop	Lucent proprietary flow control.

Examples:

These examples show how to use the set port flowcontrol command set:

```
Console> (enable) set flowcontrol receive 5/1 on
Port 5/1 flow control receive administration status set to on
(port will require far end to send flowcontrol)
Console> (enable)
Console> (enable) set flowcontrol send 5/1 off
Port 5/1 flow control send administration status set to off
(port will send flowcontrol to far end)
Console> (enable)
```

Set trunk command

Use the set trunk command to configure the VLAN tagging mode.

The syntax for this command is:

```
set trunk [mod_num/port_num][off|dot1q|plus]
```

mod_num	Number of the module.
port_num	Number of the port on the module.
off	(Optional) Forces the port to become a non-tagging port and persuade the neighboring port to become a non-tagging port. The port becomes a non-tagging port even if the neighbor port does not agree to become a non-tagging port.
dot1q	(Optional) Specifies an IEEE 802.1Q tagging on a Fast Ethernet or Gigabit Ethernet port.
Plus	(Optional) Specifies private tagging to port.

Tagging capabilities are hardware dependent.

Example:

To set port 2 on module 1 as a trunk port:

```
Console> (enable) set trunk 1/2 dot1q
Port(s) 1/2 trunk mode set to on.
Console> (enable)
```

To set port 5 on module 4 as an 802.1Q trunk port in dot1q mode:

```
Console> (enable) set trunk 4/5 dot1q
Port(s) 4/5 trunk type set to dot1q.
Console> (enable)
```

Set spantree enable command

Use the set spantree enable command to enable the spanning-tree algorithm for a System.

The syntax for this command is: **`set spantree enable`**

Example

This example shows how to enable the spanning-tree algorithm for the system.

```
Console> (enable) set spantree enable
bridge spanning tree enabled.
Console> (enable)
```

Set spantree disable command

Use the set spantree disable command to disable the spanning-tree algorithm for a System.

The syntax for this command is: **`set spantree disable`**

Example

This example shows how to disable the spanning-tree algorithm for the system.

```
Console> (enable) set spantree disable
bridge spanning tree disabled.
Console> (enable)
```

Set spantree priority command

Use the set spantree priority command to set the bridge priority.

The syntax for this command is: **`set spantree priority`** `[bridge_priority]`

bridge_priority	Number representing the priority of the bridge. The priority level is from 0 to 65535, with 0 indicating high priority and 65535 indicating low priority.

Example

This example shows how to set the bridge priority to 4096:

```
Console> (enable) set spantree priority 4096
Bridge priority set to 4096.
Console> (enable)
```

Set SMON License Command

The SMON license command enables you to activate the SMON capability of the Cajun™ P330 stack. A Cajun P330 stack can include several Cajun P330 modules. One SMON license is required per Cajun P330 stack. Installing the license is very simple. It involves connecting a terminal to one of the Cajun P330 modules and typing in a valid license number (included in the SMON License pack) using the Command Line Interface (CLI).

For a full description of the SMON License and the installation procedure please refer to the Installation Guide provided with the SMON License.

Show Commands

Show commands for Privileged level are identical to the show commands for the User level. These are described starting on page 33.

Sync time command

This command synchronizes the time of all modules in a stack.

The syntax for this command is: **sync time**

Get time command

This command retrieves the time from the network.

The syntax for this command is: **get time**

Clear Commands

Clear ip route command

Use the clear ip route command to delete IP routing table entries.

The syntax for this command is: **`clear ip route`** `<destination><gateway>`

destination	IP address of the network, or specific host to be added.
gateway	IP address of the router.

Example:

To delete the route table entries using the clear ip route command:

```
Console> (enable) clear ip route 134.12.3.0 192.1.1.1
Route deleted.
Console> (enable)
```

Clear snmp trap command

Use the clear snmp trap command to clear an entry from the SNMP trap receiver table.

The syntax for this command is: **clear snmp trap** <rcvr_addr | all>

rcvr_addr	IP address or IP alias of the trap receiver (the SNMP management station) to clear.
all	Keyword that specifies every entry in the SNMP trap receiver table

Example:

```
Console> (enable) clear snmp trap 192.122.173.82
SNMP trap receiver deleted.
Console> (enable)
```

Clear VLAN command

Use the clear VLAN command to delete an existing VLAN and return relies that were on the VLAN to the default VLAN # 1. When you clear a VLAN, all ports assigned to that VLAN are assigned to the default VLAN # 1.

The syntax for this command is: **clear VLAN** [VLAN_num]

VLAN_num	Number of the VLAN (range is 1to 3071).

Example:

This example shows how to clear an existing VLAN (VLAN 4) from a management domain:

```
Console> (enable) clear VLAN 4
This command will assign all ports on VLAN 4 to their default
in the entire management domain
Do you want to continue (y/n) [n]? y
VLAN 4 deletion successful
Console> (enable)
```

Clear cam command

Use the clear cam command to delete all entries from the CAM table.

The syntax for this command is: **clear cam**

Example:

```
Console> (enable) clear cam
CAM table entry cleared.
Console> (enable)
```

Download command

Use the download command to copy a software image from a specified host to the Flash memory of a designated module. You can only perform this command a Privileged or Supervisor levels.

The syntax for this command is: **`download`** `<host><file><mod_num>`

host	Name or IP address of host
file	Name of file to be downloaded
mod_num	Number of the module to receive downloaded image

Note: You must reset the switch after performing the download.

Reset command

Use the reset command to restart the system or an individual module. If no module number is defined or the module number of the Master is defined, the command resets the entire system. If the module number is defined, the command resets or sets to defaults the specified module (you must type the command in full).

The syntax for this command is: **`reset`** `<system|mod_num>`

mod_num	Number of the module to be restarted
system	Reset the module to its default values.

Example:

To reset the Master agent and force the entire system to reset:

```
Console> (enable) reset
This command will force a switch-over to the master module and
disconnect your telnet session.
Do you want to continue (y/n) [n]? y
Connection closed by foreign host.
host%
```

To set the Master agent and the system to their default values :

```
Console> (enable) reset system
This command will force a factory default and switch-over to
the master module and disconnect your telnet session.
Do you want to continue (y/n) [n]? y
Connection closed by foreign host.
host%
```

To reset module 4:

```
Console> (enable) reset 4
This command will reset module 4 and may disconnect your
telnet session.
Do you want to continue (y/n) [n]? y
Resetting module 4...
```

Supervisor Level Commands

This level includes all the commands of the User and Privileged Levels.

Set super password command

Use the set super password command to change the supervisor password. You can only do this from within the Supervisor Level.

The syntax for this command is: **`set superpass`**

Example:

```
Console (super)#
Enter old password: <old password>
Enter new password: <new password>
Enter New Password again: <new password>
Password changed.
Console (super)#
```

Set defpass command

Use the set defpass command to return the password for all levels to their default.

The syntax for this command is: **`set defpass`**

Example:

```
Console> (enable) set defpass
Password changed.
Console> (enable)
```

Show Commands

Show commands for the Supervisor Level are identical to the show commands for the User and Privileged Levels. These are described starting on page 33.

Set Commands

Set commands for the Supervisor Level are the same as the Set commands for the Privileged Level. These are described starting on page 44.

Specifications

Cajun P330 Switch

Physical

Height	2U (88 mm, 3.5″)
Width	482.6 mm (19″)
Depth	450 mm(17.7″)
Weight	7.5 kg (16.5 lb)

Power Requirements — AC

Input voltage	85 to 265 VAC, 50/60 Hz
Power dissipation	100 W max
Input current	1.3 A@100 VAC 0.65 A@200VAC
Inrush current	25 A@100 VAC (max.) 50 A@200VAC (max.)

Power Requirements — DC

Input voltage	-32 to -72 VDC
Power dissipation	100 W max
Input current	3.4 A max
Inrush current	50 A max

Environmental

Operating Temp.	-5 – 50^{0}C (23-122^{0}F)
Rel. Humidity	5% to 95% non-condensing

Safety — AC

- UL for US approved according to UL195O Std.
- C-UL(UL for Canada) approved according to C22.2 No.950 Std.
- CE for Europe approved according to EN 60950 Std.
- Laser components are Laser Class I approved:
  - — EN-60825/IEC-825 for Europe
  - — FDA CFR 1040 for USA

Safety — DC

- Restricted Area Access: This device should only be installed in a restricted access area.
- Installation Codes: This device must be installed in accordance with the US National Electrical Code, Articles 110-26 and 110-27, and the Canadian Electrical Code, Section 12.
- Overcurrent Protection: A readily accessible Listed branch-circuit overcurrent protective device with a 15A rating must be incorporated in the building wiring.

EMC Emissions

Emissions

Approved according to:

- US -FCC Part 15 sub part J, class A
- Europe - EN55022 class A

Immunity

Approved according to:

- EN 50082-1

Interfaces

- 24 x 10/100BASE-T RJ45 port connectors.
- RS-232 for terminal setup via RJ45 connector on front panel.

Standards Compliance

The Cajun P330 complies with:

- IEEE 802.3x Flow Control
- IEEE 802.1Q VLAN Tagging and and 802.1p compatible
- IEEE 802.1D Spanning Tree protocol
- IEEE 803.3z Gigabit Ethernet ports
- IETF MIB-II, Bridge MIB, RMON, SMON

MTBF

- 140,000 hrs minimum

Stacking Sub-module

Table A.1 Stacking Sub-module

Name	Number of Ports
X330STK	2

Expansion Sub-modules

Gigabit Ethernet Expansion Sub-modules

Table A.2 Gigabit Ethernet Expansion Sub-modules

Name	Number of Ports	Interface
X330S2	2	1000Base-SX
X330L2	2	1000Base-LX
X330S1	1	1000Base-SX
X330L1	1	1000Base-LX

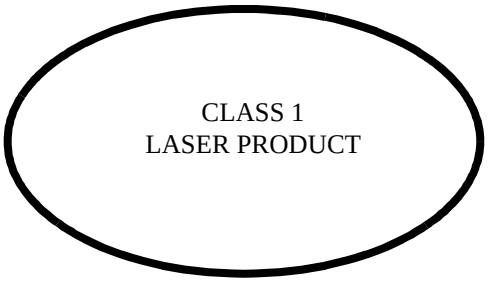
Laser Safety

The Cajun X330S1/S2 multi-mode transceivers and the Cajun X330L1/X330L2 single mode transceivers are Class 1 laser products.

They comply with IEC 825-1 and Food and Drug Administration (FDA) 21 CFR 1040.10 and 1040.11.

The transceivers must be operated under recommended operating conditions.

Laser Classification



Note: Class 1 lasers are inherently safe under reasonably foreseeable conditions of operation.

Caution: The use of optical instruments with this product will increase eye hazard.

Usage Restriction

The optical ports of the module must be terminated with an optical connector or a dust plug when not in use.

Laser Data

Cajun P330S2 Expansion Sub-modules

Wavelength: 850 nm

Output power dissipation: Max. 0.63W

Transmit power: Min. -9 dbm, Max. -4 dbm

Receive power: Min. -17 dbm, Max. 0 dbm

Cajun P330L1/2 Expansion Sub-modules

Wavelength: 1300 nm

Output power dissipation: Max. 0.68W

Transmit power (9 µm SMF): Min. -9.5 dbm, Max. -3 dbm

Transmit power (62.5 µm and 50 µm MMF): Min. -11.5 dbm, Max. -3 dbm

Receive power (9 µm SMF, 62.5 µm and 50 µm MMF): Min. -20 dbm, Max. -3 dbm

Fast Ethernet Fiber Expansion Sub-module

Table A.3 Fiber Fast Ethernet Expansion Sub-module

Name	Number of Ports	Interface
X330F2	2	100Base-FX

Ethernet/Fast Ethernet Expansion Sub-module

Table A.4 Ethernet/Fast Ethernet Expansion Sub-module

Name	Number of Ports	Interface
X330T16	16	10/100Base-T

Backup Power Supply (BUPS)

Physical

Height	2U (88 mm, 3.5″)
Width	482.6 mm (19″)
Depth	450 mm(17.7″)
Weight	10 kg (22 lb)

Power Requirements

Input voltage	85-265VAC, 50/60Hz
Input current	7.76 A@100 VAC 3.82 A@200 VAC
Inrush current	70 A@100 VAC (max.) 150 A@200 VAC (max.)
Output power	4 x 27 A@ 5.5 V
Output voltage	5.5V

Environmental

Operating Temp.	0-40^{0}C (32-105^{0}F)
Rel. Humidity	30% to 9% non-condensing

Safety

- UL for US approved according to UL195O Std.
- C-UL(UL for Canada) approved according to C22.2 No.950 Std.
- CE for Europe approved according to EN 60950 Std.

EMC Emissions

Emissions

Approved according to:

- Europe - EN55022 class B, 1994
- Europe - EN 6150-3-2 (Harmonics Current Emissions_
- Europe - EN 6150-3-3 (Flicker)

Immunity

Approved according to:

- EN 50082-1
- IEC 150-4-5

MTBF

- 200,000 hrs minimum

MTBF

The following table provides the MTBF for the Cajun P333T in various configurations.

Table A.5 MTBF

Model	Without BUPS		With BUPS	
	Without X330STK	With X330STK	Without X330STK	With X330STK
P333T	156,000	135,000	271,000	213,000
P333T+X330T16	132,000	117,000	206,000	171,000
P333T+X330F2	128,000	113,000	196,000	163,000
P333T+X330L2/ X330S2	120,000	107,000	179,000	152,000
P333T+X330L1/ X330S1	>129,000	>107,000	>179,000	>152,000

Cajun P330 Standalone Manager

The Cajun P330 Manager provides the following:

- Device Configuration - Viewing and modifying the different device configurations.
- Port RMON- Viewing graphical representations of the traffic on the ports of the Cajun P330 Switch.
- Virtual LANs - Viewing and editing Virtual LAN information.
- Link Aggregation Groups (LAGs) - Viewing and editing LAG information.
- Software Redundancy - Setting software redundancy for ports in a Cajun P330 Switch.
- Port Mirroring - Setting up port mirroring for ports in a Cajun P330 Switch.
- Trap Managers Configuration - Viewing and modifying the Trap Managers Table.
- Switch Connected Addresses - View devices connected to selected ports.

System Requirements

Minimum hardware and Operating System requirements are:

- Windows® 95 or NT® 4.0 or higher
- Pentium™ 200-Mhz-based, computer with 64 Mb of RAM (Pentium-II recommended)
- Minimum screen resolution of 1024 x 768 pixels
- 24 Mb of free Hard Disk space.

Installation

To install the Cajun P330 Standalone Manager:

1. We recommend that you close all unecessary applications currently running on your PC
2. Insert the Cajun P330 Standalone Manager CD in your PC's CD Drive.
3. In Windows 95 or Windows NT, click Start on the Task Bar and select **Run**.
4. Enter the path to the CD drive and the filename `Setup.exe` and click **OK**.
5. Follow the on screen instructions to install the Cajun P330 Manager.

Documentation and Online Help

The Standalone Manager comes with a detailed User's Guide including a Glossary of Terms and an overview of Data Communications concepts.

Software Download

You can perform software download using the CLI (see "Show download status command" on page 43) or the Cajun Download Manager (part of the CajunView Suite).

How to Contact Us

To contact Lucent's technical support, please call:

From the United States:
1-800-237-0016, press 0, then press 73300

From North America:
1-813-217-2425

Outside North America:
+972 3 645 8458

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